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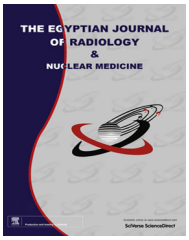

CASE REPORT

Non puerperal Total uterine inversion with cervical and vaginal inversion: An unusual complication of degenerated submucous fundal fibroid treated by vaginal hysterectomy

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Abstract Inversion of the uterus is a rare condition which is an obstetric emergency and a diagnostic challenge in gynecology. Nonpuerperal inversion usually results from a tumor implanted on fundus of the uterus as fibroid. Treatment depends on the associated pathology and the stage of the inversion. A rare case of nonpuerperal uterine inversion caused by a large fundal leiomyoma in a 45-year old woman resulting in profuse vaginal bleeding is reported which was successfully treated by vaginal l hysterectomy.

1. Introduction

Inversion of the uterus is a rare entity (1–6) and may be puerperal or nonpuerperal inversion (7). Nonpuerperal inversion is very rare (5,8,9). It occurs chiefly when the uterus acts to expel a fundal submucous leiomyoma (2,10) but endometrial carcinoma and sarcoma may have the same effect (7,11).

Inversion of the fibroid uterus is due to thinning and weakening of the uterine wall at the seat of the tumor's implantation due to the pressure atrophy, which is more marked the larger the tumor and the contractions of the uterine musculature which are excited by the prolapse of the tumor into the cavity. Nonpuerperal inversion is often chronic, although Das (12) has reported 8.6% of nonpuerperal inversion as sudden onset.

The symptoms of chronic inversion are chronic vaginal discharge and irregular uterine bleeding. Most patients complain of pelvic discomfort. A classification of genital inversion has been described (13): Stage 1: Inversion of the uterus is intrauterine or incomplete. The fundus remains within the cavity. Stage 2: Complete inversion of the uterine fundus through the cervix. Stage 3: Total inversion, whereby the fundus protrudes through the vulva. Stage 4: The vagina is also involved with complete inversion through the vulva along with an inverted uterus.

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In complete and total inversion, it is impossible to find the external cervical os. In many cases the diagnosis was not recognized until the inverted body was amputated and the peritoneal cavity opened in an attempt to remove what was thought to be a submucous myoma (14).

The inverted uterus forms an inverted pyriform swelling. It is smooth, dark red in color, and usually bleeds on palpation. This hemorrhagic, often friable mass may be confused with a exophytic tumor mass that has completely replaced the cervix. If the cervix has been completely inverted, no constricting ring is felt surrounding the neck of the swelling. Bimanual palpation will reveal the absence of the uterine body or only the cervix. The rectoabdominal method is often the most suitable, as the vagina is occupied by the inverted uterus (3).

The appropriate treatment depends on preoperative diagnosis, but abdominal or vaginal hysterectomy is recommended for benign causes if childbearing is not an issue. When a uterine malignancy is associated with uterine inversion, abdominal hysterectomy with appropriate staging is usually indicated.

2. Case report

A 45-year-old woman (gravid 5, para 5) was admitted to our hospital because of profuse vaginal bleeding. On examination she was pale, and there was a large, firm hemorrhagic mass filling the vagina and protruding to 10 cm beyond the introitus. The mass formed an inverted pyriform swelling. It was smooth, dark red in color, and bleeds on palpation. The cervix was completely inverted, and no constricting ring is felt surrounding the neck of the swelling. Bimanual palpation revealed the absence of the uterine body and only the cervix is felt abdominally. Ultrasound revealed a pseudoendometrial stripe (Fig. 1) of the inverted cervix by the opposing serosal surfaces that simulated the uterus and a fibroid mass below with heterogenous appearance with absent. So, uterine inversion was confirmed and vaginal hysterectomy without salpingo-oophorectomy was done. Anemia (Hb = 7), was corrected with blood transfusion. With prophylactic antibiotics, the postoperative period was uneventful and afebrile.

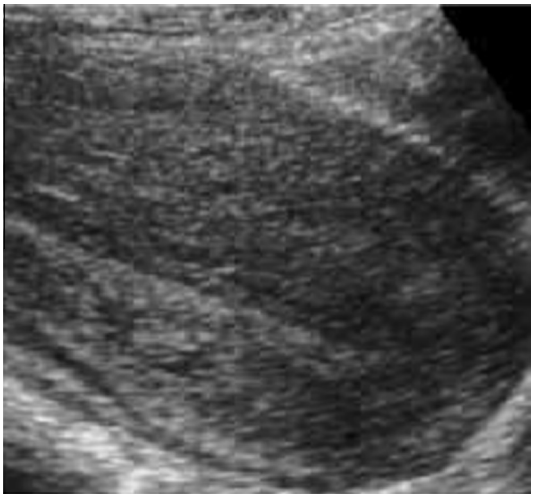

Fig. 1 Transabdominal sagittal sonogram showing a mirror image of the uterus with the endometrial pseudostripe represented by the two opposing serosal surfaces.

Pathological findings demonstrated a uterine degenerated leiomyoma (Figs. 2 and 3).

3. Discussion

Inversion of the uterus is a rare problem that is an obstetric emergency and a diagnostic challenge in gynecology. Most cases of uterine inversion are puerperal and nonpuerperal inversions are extremely rare with 88 reported cases to date, 15 accounting for only one-sixth of all cases of inversion as non-puerperal (16.35% versus 85.8%).

Takano et al. summarized 88 reported cases of non-puerperal uterine inversion; 81 (92%) of these were associated with uterine tumors, of which 20% were malignant. This emphasizes the need to perform biopsies prior to definitive treatment (15). All cases of non-puerperal inversions are usually chronic but 10% are presented as sudden onset. The present case was an acute nonpuerperal uterine inversion due to submucous myoma. This is rare and diagnosis is often difficult (16). Symptoms associated are vaginal bleeding, vaginal swelling, and urinary disturbance.

Imaged transabdominally in a transverse plane in the lower pelvis, the uterus appeared as a "target sign" with a hyperechoic fundus surrounded by a hypo-echoic rim, representing fluid within the space between the inverted fundus and the vaginal wall. The endometrium lined the periphery of the inverted fundus. Imaged transabdominally in the sagittal plane, the uterus appeared as a mirror image of a normally situated uterus. The uterine fundus was in the vagina with fluid in the vaginal fornices. The two opposed sero-sal surfaces simulated the appearance of an endometrial stripe or "pseudostripe." Transvaginal imaging showed similar findings (15,16).

MRI and CT scan have been shown to be useful diagnostic tools (5–13). MRI can examine the uterine inversion. Lewin et al. reported that in T2-weighted MRI scans, a U-shaped uterine cavity and a thickened and inverted uterine fundus on a sagittal image and a "bulls-eye" configuration on an axial image are signs indicative of uterine inversion (17). In the present case the symptoms had sudden onset and the patient required more immediate action.

In acute uterine inversion, hemorrhage can be massive and hypovolemia should be vigorously treated with fluid and blood replacement (18). Delay in the treatment of acute uterine inversion causes dense constriction ring formation, progressive edema, hemorrhage, and tissue necrosis; thus, the uterus cannot be reinverted by vaginal manipulation. In acute inversion, blood replacement, antibiotics, and careful monitoring are necessary for successful perioperative management.

Treatment of the inversion depends on the stage and associated pathology. While stage 1 will often afford easy repositioning of the fundus, stages 2–4 will more likely lead to hysterectomy (13). In the present case (a stage 4), vaginal hysterectomy was done. The prognosis depends on the initial diagnosis and the stage of disease (3). Nonpuerperal uterine inversion is a very unusual condition that most gynecologists will never encounter, and thus has to be managed based upon little or no previous experience. In the presence of a mass protruding from vagina or vulva, we must consider uterine inversion. Nonpuerperal uterine inversion may be due to malignancies; therefore, preoperative diagnosis and histology

Fig. 2 Operative view with the mass prolapsed with the cervix (left). Cut section of the prolapsed mass after excision with viscous clear fluid and irregular surface (right).

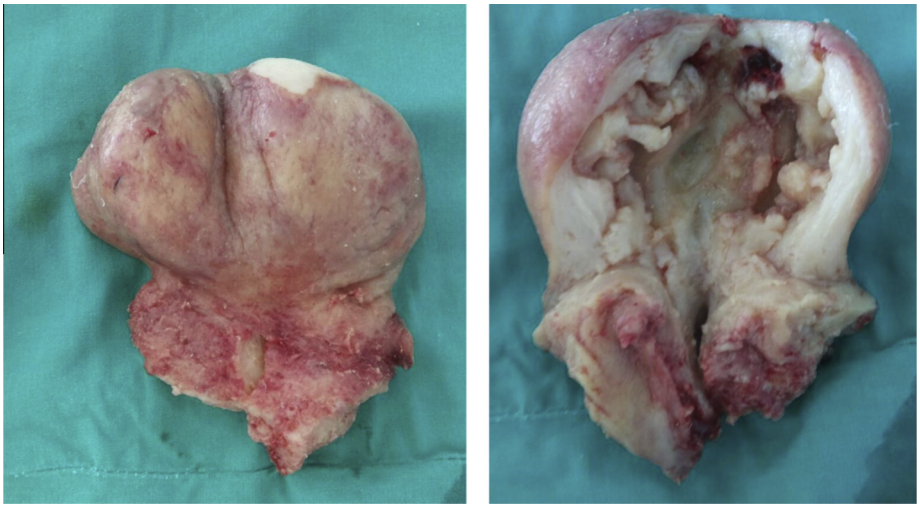

Fig. 3 External view of the mass showing the endometrial lining outside with cervix below (left). Cut section of the mass showing irregular surface (right).

especially in chronic uterine inversion would aid in planning proper treatment.

4. Conclusion

Non-puerperal uterine inversion is an unusual condition but can occur in premenopausal age. Clinical diagnosis of this is often not easy and sometimes this situation can prove to be fatal. A high index of suspicion is necessary for diagnosis when a large prolapsed fibroid is encountered. The uterus per se may not be palpable on examination or appear concave on bimanual examination or during laparotomy. Uterine inversion has a good outcome if diagnosed and managed timely. Repositioning of uterus may not be possible in all cases, leaving hysterectomy as the only option.

5. Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

6. Conflict of Interest

The authors declare that there are no conflict of interests.

Acknowledgments

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References

(1) Aspevik RK, Haffner J. Puerperal inversion of the uterus. Tidsskr Nor Laegeforen 1989;109:1403–4 [in Norwegian].
(2) Barhmi R, Ferhati D, Nabil S, et al. Complete nonobstetrical uterine inversion. J Gynecol Obstet Biol Reprod 1995;24:155–7 [in French].
(3) Gowri V. Uterine inversion and corpus malignancies: a historical review. Obstet Gynecol Surv 2000;55:703–7.
(4) Grischke EM, Wallwiener D, Bastert G. Puerperal uterine inversion with covered uterine rupture. Z Geburtshilfe Neonatol 1999;203:123–5 [in German].
(5) Salomon CG, Patek SK. Computed tomography of chronic nonpuerperal uterine inversion. J Comput Assist Tomogr 1990;14:1024–6.
(6) Tews G, Ebner T, Yaman C, Sommergruber M, Bohaumilitzky T. Acute puerperal inversion of the uterus—treatment by a new

abdominal uterus preserving approach. Acta Obstet Gynecol Scand 2001;80:1039–40.
(7) Krenning RA, Dorr PJ, de Groot WH, de Goey WB. Nonpuerperal uterine inversion. Case report. Br J Obstet Gynaecol 1982;89:247–9.
(8) Ehrlich CE, Bonaventura LM. Nonpuerperal inversion of the uterus by endometrial stromal sarcoma of the uterine fundus. South Med J 1977;70:872–3.
(9) Rattray CA, Parris CN, Chisholm G, Coard KC. Complete nonpuerperial uterine inversion as a result of a uterine sarcoma. West Indian Med J 2000;49:245–7.
(10) Lai FM, Tseng P, Yeo SH, Tsakok FH. Nonpuerperal uterine inversion—a case report. Singapore Med J 1993;34:466–8.
(11) Sodandc A, Al-Amin A. Nonpuerperal inversion of the uterus in a teenager. Saudi Med J 1998;19:500–2.
(12) Das P. Inversion of the uterus. J Obstet Gynaecol Br Emp 1940;47:527–48.
(13) Skinner GN, Louden KA. Nonpuerperal uterine inversion associated with an atypical leiomyoma. Aust N Z J Obstet Gynaecol 2001;41:100–1.
(14) Jones Jr HW. Nonpuerperal inversion of the uterus. Am J Surg 1951;81:492–5.
(15) Takano K, Ichikawa Y, Tsunoda H, Nishida M. Uterine inversion caused by uterine sarcoma: a case report. Jpn J Clin Oncol 2001;31:39–42.
(16) Kopal S, Seckin NC, Turhan NO. Acute uterine inversion due to a growing submucous myoma in an elderly woman: case report. Eur J Obstet Gynecol Reprod Biol 2001;99:118–20;
Momin AA, Saifi SG, Pethani NR, Mitha SH. Sonography of postpartum uterine inversion from acute to chronic stage. J Clin Ultrasound 2009;37:53–6.
(17) Lewin JS, Bryan PJ. MR imaging of uterine inversion. J Comput Assist Tomogr 1989;13:357–9Ashraf-Ganjooie T. Nonpuerperal uterine inversion. Arch Iran Med 2005; 8(1): 66.
(18) Craigo SD, Kapernick PS. Postpartum hemorrhage and the abnormal peurperium. In: Decherney AH, Pernoll ML, editors. Current Obstetrics and Gynecologic Diagnosis and Treatment. East Norwalk: Appleton and Lange; 1991. p. 574–93.